

**AMENDMENTS TO THE SPECIFICATION:**

Page 1, please add the following new paragraphs before paragraph [0001]:

[0000.2] CROSS-REFERENCE TO RELATED APPLICATIONS

[0000.4] This application is a 35 USC 371 application of PCT/EP 2004/053230  
filed on December 2, 2004.

[0000.6] BACKGROUND OF THE INVENTION

Please replace paragraph [0004] with the following amended paragraph:

[0004] Fuel injectors for reservoir injection systems (~~common-rail systems~~) are as a rule triggered via solenoid valves or piezoelectric actuators. By means of the solenoid valves or piezoelectric actuators, a pressure relief of a control chamber is effected. To that end, the control chamber has a relief conduit, in which as a rule there is an outlet throttle. Filling the control chamber for actuating the injection valve member is as a rule done via an inlet from the high-pressure side, with an inlet throttle element let into it. By means of the solenoid valve associated with the control chamber, or the piezoelectric actuator associated with it, a valve closing member is actuated, which closes the outflow conduit. Upon actuation of the solenoid valve or piezoelectric actuator, the valve closing member, which may for example be a ball body or a cone, uncovers the outflow conduit, so that a control volume is capable of flowing out of the control chamber. As a result, the pressure in the control chamber drops, and an injection valve member, as a rule embodied as a needle, acted upon by the control chamber moves vertically upward. As a result of the upward motion of the injection valve member, injection openings on the end of the fuel injector toward the combustion chamber

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are uncovered, so that fuel can be injected into the combustion chamber of an internal combustion engine.

Page 3, please replace paragraph [0007] with the following amended paragraph:

[0007] Summary of the Invention

### **SUMMARY AND ADVANTAGES OF THE INVENTION**

Please replace paragraph [0008] with the following amended paragraph:

[0008] By the solution proposed according to the invention, a fuel injector of especially compact structure is furnished, with which a direct actuation of a needle-like injection valve member is achieved. To that end, an actuator that has a piezoelectric crystal stack is received in a pressure chamber that is filled with **fuel at** system pressure. A face end communicates with a first booster piston, which surrounds a second booster piston. The second booster piston is embodied on the injection valve member. The first booster piston and the second booster piston are guided one inside the other, which makes further guidance of the injection valve member, besides a guide portion thereof, possible inside the nozzle holder. As a result, a further guide portion of the injection valve member can be dispensed with.

Page 5, please replace paragraph [0011] with the following amended paragraph:

[0011] Drawing

### **BRIEF DESCRIPTION OF THE DRAWINGS**

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Please replace paragraph [0012] with the following amended paragraph:

[0012] The invention is described in further detail below, in conjunction with the single drawing figure showing a section through the fuel injector proposed according to the invention, with direct control of the injection valve member.

Please delete paragraphs [0013] and [0014].

Please replace paragraph [0015] with the following amended paragraph:

[0015] Variant Embodiments

#### **DESCRIPTION OF THE PREFERRED EMBODIMENTS**

Please replace paragraph [0016] with the following amended paragraph:

[0016] The drawing shows a fuel injector 1, which includes an injector body 2[.] ~~The injector body 2~~ is connected to a nozzle holder 3 via a nozzle lock nut 4. This arrangement is also known as a nozzle holder combination. For connecting the injector body 2 and the nozzle holder 3, a male-threaded portion 34 is provided on the injector body, onto which the nozzle lock nut 4, provided with a female thread 35, is tightened at a predetermined torque. The nozzle lock nut 4 surrounds the nozzle holder 3 with an annular contact face.

Page 6, please replace paragraph [0017] with the following amended paragraph:

[0017] In the injector body 2, a high-pressure inlet 6 is provided, which communicates with a high-pressure storage volume (common rail), not shown in the drawing. The high-pressure storage volume (~~common rail~~) is acted upon via a high-pressure pump, not shown in the drawing. The pressure level (system pressure) that prevails in the common rail is in the range between 1400 bar and 1600 bar. Via the high-pressure inlet 6, a pressure chamber 7, which is

embodied in the injector body 2, is subjected to fuel 8, which is at system pressure. From the pressure chamber 7 inside the injector body 2, a nozzle chamber inlet 24 branches off, by way of which the fuel that is at system pressure is delivered to a nozzle chamber 25 in the nozzle holder 3.

Please replace paragraph [0019] with the following amended paragraph:

[0019] The piezoelectric actuator 9 rests on a face end 12 of a first booster piston 11. The wall of the first booster piston 11 is provided with a compensation bore 13, by way of which the pressure chamber 7 is in communication with a hydraulic chamber 41. The first booster piston 11 surrounds a second booster piston 19 that is received on the injection valve member 5. The second booster piston 19 furthermore has a recess 32, with a spring element 17 let into it that is braced at a contact face 37 in the inside of the first booster piston 11. The second booster piston 19 and the injection valve member 5 are solidly connected to one another. A first annular face 38 of the second booster piston 19 defines the hydraulic chamber 41, while a second annular face 39 on the underside of the second booster piston 19 defines a control chamber 18. The control chamber is likewise defined by an annular face 20 on the underside of the first booster piston 11, as well as by the inside 40 of a control chamber sleeve 21 and an annular plane face portion 23 of the nozzle holder ~~[[23]]~~ 3 that rests on the injector body 2.

Page 7, please replace paragraph [0020] with the following amended paragraph:

[0020] A support ring 14 is received on the jacket face of the first booster piston 11, and a contact ring 15 is braced on the support ring. The contact ring 15 forms a contact face for a compression spring 16, which presses the control chamber sleeve 21 against the plane face

[[33]] 23 of the nozzle holder 3. The control chamber sleeve 21 surrounding the first booster piston 11 has a bite edge 22. By the action of pressure on the control chamber sleeve 21 by means of the compression spring 16, the bite edge 22 is pressed sealingly against the top of the plane face 23 of the nozzle holder 3. Thus the control chamber 18, in which for actuating the injection valve member 5 of pressure other than the system pressure inside the pressure chamber 5 is necessary, is effectively sealed off from the pressure chamber 7 that is acted upon by fuel 8 that is at system pressure.

Page 8, please replace paragraph [0022] with the following amended paragraph:

[0022] To assure the subjection of the control chamber sleeve 21 to pressure, this sleeve, on the side toward the compression spring 16, has a contact face 33 for the compression spring 16. The face end of the injector body 2 and the plane face 23 of the nozzle holder 3 form an abutting seam 36, which surrounded by the nozzle lock nut 4 when the injector body 2 and nozzle holder 3, are screwed together represents a pressure-tight seal of the control chamber 18.

Please replace paragraph [0024] with the following amended paragraph:

[0024] In the currentless state of the piezoelectric crystal stack 10 of the actuator 9, the first booster piston 11 remains in its position of repose, because of the pressure equilibrium between the pressure chamber 7 and the hydraulic chamber 41 via the inflow bore 13. The spring element 17 resting on the contact face 37 urges the second booster piston 19 in the closing direction, so that the injection valve member 5, solidly joined to this booster piston, is put into its seat 28. As a result, the injection openings 29 embodied on the end of the nozzle

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holder 3 toward the combustion chamber are closed. No fuel reaches the combustion chamber 30 of the engine. The spring element 17 is designed such that in the closing state it generates a higher closing force, which exceeds the hydraulic ~~opening~~ force acting in the opening direction that is generated at the pressure step 26 in the pressure chamber 25 when pressure is exerted on that.

Page 11, please add the following new paragraph after paragraph [0029]:

[0032] The foregoing relates to a preferred exemplary embodiment of the invention, it being understood that other variants and embodiments thereof are possible within the spirit and scope of the invention, the latter being defined by the appended claims.

Please delete pages 12 and 13.